

REMARKS

The enclosed is responsive to the Examiner's Office Action mailed on October 19, 2007 and is being filed pursuant to a Request for Continued Examination (RCE) as provided under 37 CFR 1.114. At the time the Examiner mailed the Office Action claims 1-4, 6-16, 18-22 and 24-34 were pending. By way of the present response the Applicants have: 1) amended claims 1, 4, 7, 10, 13, 16, 18, 19, 22, 25, 29,30, 32; 2) added no new claims; and 3) canceled claim 9. As such, claims 1-4, 6-8, 10-26, 18-22 and 24 are now pending. The Applicants respectfully request reconsideration of the present application and the allowance of all claims now represented.

Claim Rejections

35 U.S.C. 103(a) Rejections

Claims 1-4, 6-16, 18-22 and 24-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cai, et al., et al., U.S. Patent No. 6,349,363 (hereinafter "Cai") and further in view of Gaither, et al., U.S. Patent No. 6,434,672 (hereinafter "Gaither")

Cai discloses a system including multiple program execution entities and a cache memory having multiple sections. (Cai abstract) Additionally, Cai discloses a technique where the cache controller selects one of the P-caches based on a comparison of the EID provided by a request and the EID values stored in the storage elements. (Cai column 5, lines 56-59)

Gaither discloses a system including a plurality of processors each having dedicated cache memories, another level of cache shared by the plurality of caches, and a main memory. (Gaither abstract)

The combination of Cai and Gaither does not describe what Applicants' claims require. With respect to claims 1 and 13, the combination does not describe:

A method, comprising:
partitioning a cache array into one or more special-purpose entries and one or more general-purpose entries, wherein special-purpose entries are only allocated for one or more streams having a particular stream ID and the stream ID is stored outside the cache array, wherein the special-purpose entries to use a first cache replacement algorithm and the one or more general-purpose entries to use a second cache replacement algorithm;
determining if a cross-access scenario exists between at least one of the one or more special purpose entries and at least one of the one or more general purpose entries; and
if the cross-access scenario exists, permitting cross-access of data between the at least one of the one or more special-purpose entries and the at least one of the one or more general-purpose entries that relate to the cross-access scenario.

First, Cai and Gaither, taken alone or in combination, do not describe “determining if a cross-access scenario exists between at least one of the one or more special purpose entries and at least one of the one or more general purpose entries.” The Office Action asserts that Cai describes this limitation. Specifically, the Office Action asserts that because “cache related signals such as snoop signals may be provided to the cache controller,” that Cai determines if a

cross-access scenario exists. Snooping is typically a process by which individual caches monitor address lines for accesses to memory locations that they have cached. When a write operation is observed to a location that a cache has a copy of, the cache controller invalidates its own copy of the snooped memory location. Cai describes the use of a single cache controller for all of the caches that apparently receives cache snoop signals, but does not describe that this cache controller determines if there is cross-access between caches.

Second, Cai and Gaither, taken alone or in combination, do not describe “if the cross-access scenario exists, permitting cross-access of data between the at least one of the one or more special-purpose entries and the at least one of the one or more general-purpose entries that relate to the cross-access scenario.” The Office Action states that Cai fails to disclose the above reference limitation and points to two locations within Gaither as describing this limitation. These two locations of Gaither discuss “snarling.” Snarling occurs when a cache controller watches address and data to update its own copy of a memory location when something else modifies a location in main memory. Snarling does not describe permitting cross-access between caches or sections of a cache.

Finally, the claim requires that each cache have its own replacement algorithm. Neither reference describes this.

Accordingly, the combination does not describe what Applicant’s claims 1 and require. Claims 2-4 and 6 are dependent on claim 1 and are allowable for at least the same reason. Claims 14-18 and 18 are dependent on claim 13 and are allowable for at least the same reason.

With respect to claim 7, the combination does not describe:

a cache memory array partitioned into one or more special-purpose entries and one or more general-purpose entries, wherein special-purpose entries are only allocated for one or more streams having a particular stream ID, wherein the stream ID is stored outside the cache array, wherein the special-purpose entries use a first cache replacement algorithm and the one or more general-purpose entries use a second cache replacement algorithm;

control logic to determine if a cross-access scenario exists between at least one of the one or more special purpose entries and at least one of the one or more general purpose entries; and

if the cross-access scenario exists, the control logic to permit cross-access of data between the at least one of the one or more special-purpose entries and the at least one of the one or more general-purpose entries that relate to the cross-access scenario.

First, Cai and Gaither, taken alone or in combination, do not describe “control logic to determine if a cross-access scenario exists between at least one of the one or more special purpose entries and at least one of the one or more general purpose entries.” The Office Action asserts that Cai describes this limitation. Specifically, the Office Action asserts that because “cache related signals such as snoop signals may be provided to the cache controller,” that Cai determines if a cross-access scenario exists. Snooping is typically a process by which individual caches monitor address lines for accesses to memory locations that they have cached. When a write operation is observed to a location that a cache has a copy of, the cache controller invalidates its own copy of the snooped memory location. Cai describes the use of a single cache controller for all of the caches that apparently receives cache snoop signals, but does not describe that this cache controller determines if there is cross-access between caches.

Second, Cai and Gaither, taken alone or in combination, do not describe “if the cross-access scenario exists, the control logic to permit cross-access of data between the at least one of the one or more special-purpose entries and the at least one of the one or more general-purpose entries that relate to the cross-access scenario.” The Office Action states that Cai fails to disclose the above reference limitation and points to two locations within Gaither as describing this limitation. These two locations of Gaither discuss “snarfing.” Snarfing occurs when a cache controller watches address and data to update its own copy of a memory location when something else modifies a location in main memory. Snarfing does not describe permitting cross-access between caches or sections of a cache.

Finally, the claim requires that each cache have its own replacement algorithm. Neither reference describes this.

Accordingly, the combination does not describe what Applicant’s claim 7 requires. Claims 8 and 10-12 are dependent on claim 7 and are allowable for at least the same reason.

Claims 19, 25 and 30 have similar limitations to 1, 7, and 13 are allowable for at least the same reasons.

CONCLUSION

Applicant respectfully submits that all rejections have been overcome and that all pending claims are in condition for allowance.

If there are any additional charges, please charge them to our Deposit Account Number 02-2666. If a telephone conference would facilitate the prosecution of this application, the Examiner is invited to contact Ryan W. Elliott at (408) 720-8300.

Respectfully submitted,

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Date: 3/19/08

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